

ABSTRACT

This specification describes techniques for manufacturing an electronic system module. The module includes flexible multi-layer interconnection circuits with trace widths as narrow as 5 microns or less. A glass panel manufacturing facility, similar to those employed for making liquid crystal display, LCD, panels is preferably used to fabricate the interconnection circuits. A multi-layer interconnection circuit is fabricated on the glass panel using a release layer. A special assembly layer is formed over the interconnection circuit comprising a thick dielectric layer with openings formed at input/output (I/O) pad locations. Solder paste is deposited in the openings using a squeegee to form wells filled with solder. IC chips are provided with gold stud bumps at I/O pad locations, and these bumps are inserted in the wells to form flip chip connections. The IC chips are tested and reworked. The same bump/well connections can be used to attach fine-pitch cables. Module packaging layers are provided for hermetic sealing and for electromagnetic shielding. A blade server or supercomputer embodiment is also described.